

Claims:

1. A shaving apparatus, comprising:
an outer cutter having a plurality of apertures;
5 an undercutter assembly adjacent to said outer
cutter; and
a motor for reciprocally moving said undercutter
assembly in a reciprocation direction;
said undercutter assembly comprising a primary
10 undercutter and a secondary undercutter which are
arranged such that blade elements of the primary and
secondary undercutters are mutually interleaved;
wherein the primary undercutter is coupled to said
motor for driving thereof in the reciprocation direction
15 and wherein the secondary undercutter is mounted for
movement relative to the primary undercutter in the
reciprocation direction such that, in response to the
reciprocation of the primary undercutter, the secondary
undercutter reciprocates relative to the primary
20 undercutter.
2. A shaving apparatus according to Claim 1, wherein
said secondary undercutter is mounted to the primary
undercutter.
- 25 3. A shaving apparatus according to Claim 1, wherein
said secondary undercutter is mounted independent of the
primary undercutter.
- 30 4. A shaving apparatus according to Claim 1, wherein
the primary and secondary undercutters are carried on a
support block which is moveable in the reciprocation
direction.
- 35 5. A shaving apparatus according to Claim 1, wherein
the primary undercutter is biased towards the outer

cutter by a primary biasing element and wherein the secondary undercutter is biased to the outer cutter by a secondary biasing element.

- 5 6. A shaving apparatus according to Claim 5, wherein a first end of the secondary biasing element is connected to the primary undercutter and a second end of secondary biasing element is connected to the secondary undercutter.

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7. A shaving apparatus according to Claim 6, wherein the secondary biasing element comprises a pair of coil springs.

- 15 8. A shaving apparatus according to Claim 6, wherein the primary and secondary biasing elements are arranged on at least one carrier.

9. A shaving apparatus according to Claim 5, wherein
20 respective first ends of the primary and secondary biasing elements are connected to a carrier and respective second ends of the primary and secondary biasing elements are connected to respective primary and secondary undercutters.

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10. A shaving apparatus according to Claim 8 or 9, wherein at least one of the primary biasing element and the secondary biasing element is pre-biased by spacers which are disposed between the respective biasing element
30 and the carrier.

11. A shaving apparatus according to Claim 1, wherein said secondary undercutter is nested within said primary undercutter and an outer circumference of the cutter
35 assembly is formed by peripheral edges of the interleaved primary and secondary blade elements.

12. A shaving apparatus according to Claim 1, wherein the secondary undercutter comprises a plastics material.

5 13. A shaving apparatus according to Claim 1, further comprising a magnet for biasing the blade elements of the secondary undercutter into contact with the blade elements of the primary cutter in at least one reciprocation direction.

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14. A shaving apparatus according to Claim 13, wherein the secondary undercutter carries at least one pole of a first polarity and the primary undercutter has, adjacent the at least one pole of the secondary undercutter, at least one pole of a second polarity opposed to said first polarity.

15. A shaving apparatus according to Claim 1, wherein the secondary undercutter reciprocates in lagging relationship to the primary undercutter.

16. A shaving apparatus according to Claim 1, wherein the secondary undercutter and the primary undercutter cooperate such that the interleaved blade elements move towards one another.

17. A shaving apparatus according to Claim 16, wherein the interleaved blades move towards one another in clamping relationship to hairs trapped therebetween.

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18. A shaving apparatus according to Claim 17, wherein the cooperating secondary undercutter and primary undercutter pull said trapped hair prior to cutting of said hair.

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19. An undercutter assembly for a shaver of the dry-type having an outer cutter and a motor drive mechanism, said undercutter assembly comprising:

5 a primary undercutter adapted to be reciprocated by the drive mechanism and having primary blade elements; and

a secondary undercutter disposed within said primary undercutter for displacement relative said primary undercutter and having secondary blade elements
10 interleaved with said primary blade elements.

20. An undercutter assembly according to Claim 19, wherein said secondary undercutter is mounted to the primary undercutter.

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21. An undercutter assembly according to Claim 19, wherein said secondary undercutter is mounted independent of the primary undercutter.

20 22. An undercutter assembly according to Claim 19, wherein

the primary biasing element is adapted to bias the primary undercutter to the outer cutter and

25 the secondary biasing element is adapted to bias the secondary undercutter to the outer cutter.

23. An undercutter assembly according to Claim 22, wherein the secondary biasing element comprises a pair of coil springs.

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24. An undercutter assembly according to Claim 22, wherein a first end of the secondary biasing element is connected to the primary undercutter and a second end of secondary biasing element is connected to the secondary
35 undercutter.

25. An undercutter assembly according to Claim 22,
further including a carrier and wherein respective first
ends of the primary and secondary biasing elements are
connected to the carrier and respective second ends of
5 the primary and secondary biasing elements are connected
to respective primary and secondary undercutters.

26. An undercutter assembly according to Claim 19,
wherein said secondary undercutter is nested within said
10 primary undercutter and an outer circumference of the
undercutter assembly is formed by peripheral edges of the
interleaved primary and secondary blade elements.

27. An undercutter assembly according to Claim 19,
15 wherein the secondary undercutter comprises a plastics
material.

28. An undercutter assembly according to Claim 27,
wherein the blade elements of the secondary undercutter
20 comprise a plastics material having enhanced frictional
characteristics.

29. A method of shaving for use with shaving apparatus
having an undercutter assembly having a primary
25 undercutter and a secondary undercutter, said primary and
secondary undercutters having interleaved blade elements;
the method comprising the steps of:

reciprocally moving the undercutter assembly in hair
shearing relation with an outer cutter;

30 moving the primary undercutter relative to the
secondary undercutter;

trapping hairs which are to be cut between
interleaved blade elements of the primary and secondary
undercutters ;

pulling said trapped hairs by continued movement of the undercutter assembly in a respective reciprocation direction; and

cutting said hairs between the outer cutter and the
5 undercutter assembly.

30. A method of shaving for use with shaving apparatus having an undercutter assembly having a primary undercutter and a secondary undercutter, said primary and
10 secondary undercutters having interleaved blade elements; the method comprising the steps of:

reciprocally moving the undercutter assembly in hair shearing relation with an outer cutter;

moving the primary undercutter relative to the
15 secondary undercutter in a first reciprocation direction;

whereby said moving primary undercutter entrains the secondary undercutter and continued movement of the primary undercutter constrains the secondary undercutter to move with the primary undercutter in the first
20 reciprocation direction,

reversing direction of moving the primary undercutter,

whereby continued motion of the primary undercutter causes the secondary undercutter to reverse direction,
25 and

cutting hairs between the outer cutter and the undercutter assembly.

31. A method according to Claim 29 or 30, including the
30 step of causing the secondary blade elements to move relative to the primary blade elements in the reciprocation direction in a lagging relation with respect thereto, whereby to provide contact between adjacent blade elements for trapping said hairs.

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32. A method as claimed in Claim 31, wherein the secondary undercutter blades lag relative to the primary undercutter blades in response to the inertia of the secondary undercutter.

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33. A method according to Claim 29 or 30, further comprising the steps of:

 biasing the primary blade elements towards the outer cutter by a primary biasing element; and

10 biasing the secondary blade elements towards the outer cutter by a secondary biasing element.

34. A method according to Claim 33, further comprising the step of positioning the secondary biasing element
15 between the secondary undercutter and the primary undercutter.

35. A method according to Claim 33, for use with shaving apparatus further having a carrier external of the
20 primary undercutter, and method further comprising the steps of:

 biasing the primary undercutter to the carrier through the primary biasing element; and

25 biasing the secondary undercutter to the carrier through the secondary biasing element.